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## Original article

Two species of genus *Ypsolopha* Latreille (Lepidoptera: Ypsolophidae) from Korea, with first description of female of *Ypsolopha fujimotoi* MoriutiSol-Moon Na<sup>a</sup>, Dong-June Lee<sup>a</sup>, Bo-Sun Park<sup>a</sup>, Yang-Seop Bae<sup>a,b,\*</sup><sup>a</sup> Division of Life Science, Incheon National University, Incheon, South Korea<sup>b</sup> Bio-Resource and Environmental Center, College of Life Sciences and Bioengineering, Incheon National University, Incheon, South Korea

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## ABSTRACT

Japanese species, *Ypsolopha fujimotoi* Moriuti, 1964 is reported from Korea for the first time. Additionally, the female of *Ypsolopha fujimotoi* Moriuti is newly described. Illustrations of adults and photographs of genitalia, diagnosis, distribution, and host plants are provided, as well as a discussion of *Y. fujimotoi* Moriuti and *Ypsolopha longa* Moriuti.

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## Introduction

The genus *Ypsolopha* Latreille, 1796, belongs to the family Ypsolophidae, with about 160 described species worldwide (Jin et al 2013). Among them, about 70 species are distributed in East Asia (Jin et al 2013; Park et al 2014; Ponomarenko and Zinchenko 2013; Sohn et al 2010). *Ypsolopha* species can be recognized by the following characters: forewing elongate with round or falcate at apex; labial palpus with well tuft on ventral surface of second segment. *Ypsolopha fujimotoi* Moriuti and *Ypsolopha longa* Moriuti were described together in 1964. Also, *Y. fujimotoi* Moriuti is similar to *Y. longa* Moriuti in the superficial characteristics, but diagnostic characters of these two species are short in the original description. *Y. fujimotoi* Moriuti was described from only one male. The female genitalia are still undescribed, and additional specimens have not been collected after the original description in Japan. *Y. longa* Moriuti was first reported by Jeong et al (1995) from Korea without taxonomic notes of this species from Korea.

In the present study, we report a species *Y. fujimotoi* Moriuti, 1964 from Korea for the first time, as well as provide a discussion of *Y. longa*. Additionally, a female of *Y. fujimotoi* Moriuti, 1964 is described for the first time. Illustrations of adults and genitalia, diagnosis, description of adults and genitalia, host plants, and distribution are provided.

## Materials and methods

Specimens examined are based on the materials collected from Korea. The specimens were mostly collected using light traps with a mercury vapor lamp (200 V/200 W, Dongseong Co., Korea) and four lamps (20W, FL20SbL/18, Kumho Co., Korea). Genitalia were dissected and examined under a Leica EZ4 stereomicroscope (Leica Microsystems, CMS GmbH, Wetzlar, Germany). Images of adults and genitalia were taken with a Nikon D700 digital camera attached to a Nikon AF-S VR Micro-Nikkor 105mm f/2.8G IF-ED lens (Nikon Co., Japan) and a Leica DM 2500 microscope (Leica Microsystems, CMS GmbH, Wetzlar, Germany). Voucher specimens are deposited in the Animal Diversity Laboratory, College of Life Sciences, Incheon National University, Incheon, Korea. Abbreviations used herein are as follows; TL, type locality; GG, Gyeonggi Province; GW, Gwangwon Province; JB, Jeollabuk Province; JN, Jeollanam Province; and INU, Incheon National University.

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### Systematic accounts

Family Ypsolophidae [Guenée, 1845](#)

Subfamily Ypsolophinae [Guenée, 1845](#)

Genus *Ypsolopha* [Latreille, 1796](#)

#### *Ypsolopha fujimotoi* [Moriuti, 1964](#)

([Figures 1A–1C, 3A–3D, 5A, 5B](#))

*Ypsolophus fujimotoi* [Moriuti, 1964](#): 209. TL: Japan (Kyushu).

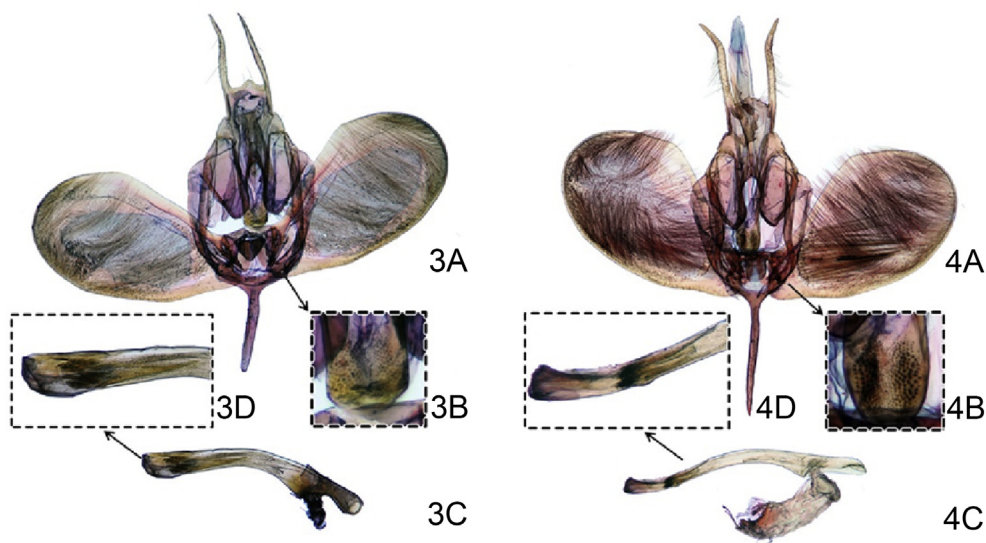
*Ypsolopha fujimotoi* [Moriuti, 1977](#): 106; [Moriuti, 1982](#): 211;

[Yamauchi and Hirowatari, 2013](#): 174.

**Adult** ([Figures 1A–1C](#)). Wingspan, 23–30 mm. Vertex rough, with reddish brown or brown, elongate narrow scales, frons smoothly pale brown, dark gray around compound eye; ocellus present. Antenna filiform; scape and flagellum reddish brown or brown. Labial palpus porrect, pointed terminally; tuft on ventral surface of second segment blackish pale brown outside and creamy white inside. Thorax reddish brown; tegula reddish brown or whitish purple inwardly, reddish brown outwardly. Fore- and midleg femur to tibia grayish white and tarsus brown; hindleg femur to tibia pale brown, tarsus mixed with black and pale brown. Forewing with apex acutely expanded outwardly, ground color reddish brown or brown with black scales scattered; a small black



**Figures 1–2.** Adults of *Ypsolopha* spp: 1, *Ypsolopha fujimotoi* Moriuti, ♀; 2, *Y. longa* Moriuti, ♂.



**Figures 3–4.** Male genitalia of *Ypsolopha* spp: 3, *Ypsolopha fujimotoi* Moriuti, gen. slide no. INU-4570; 4, *Y. longa* Moriuti, gen. slide no. INU-4567.

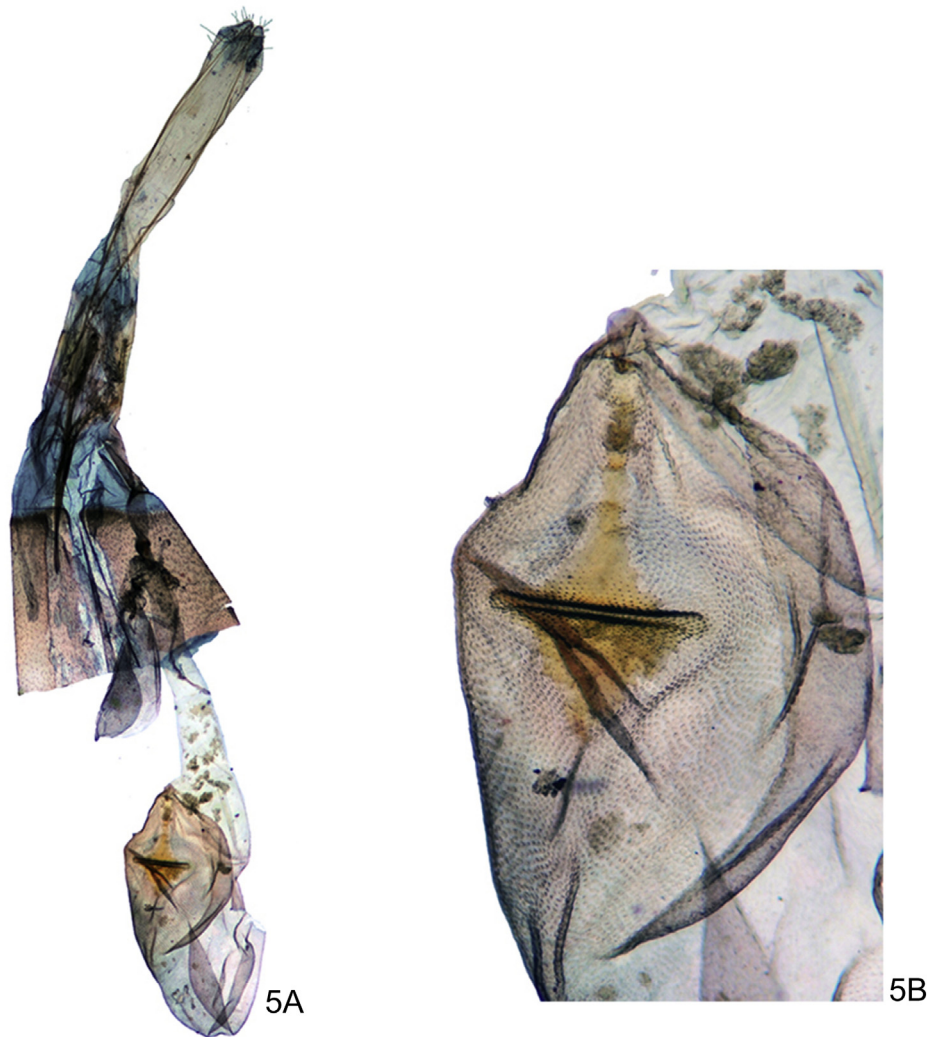


Fig. 5. Female genitalia of *Ypsolopha fujimotoi*: 5A, Female genitalia of *Ypsolopha fujimotoi*; 5B, Enlarged signum of *Ypsolopha fujimotoi*, gen. slide no. INU-4516.

dot near the end of cell; sometimes with four whitish purple horizontal lines, cilia reddish brown or brown. Hindwing grayish pale brown, cilia ocherous gray. Abdomen pale shining gray.

**Male genitalia** (Figures 3A–3D). Socius slender, pointed at apex. Uncus small subulate on posterior middle margin. Valva elongate–ovate. Gnathos spoon-like shaped, densely covered with teeth. Saccus about same length of socius. Adeagus slightly broad, little curved at middle, same length of valva, cornuti composed eight small spines.

**Female genitalia** (Figures 5A and 5B). Papilla analis semioval. Intersegmental membrane between papilla analis and 8<sup>th</sup> abdominal segment 1/3 length of abdomen. Apophyses posteriores 2.8 times as long as apophyses anteriores. Antrum short, parallel-sided. Ductus bursae nearly as long as corpus bursae, broad, tubular, membranous, narrowed toward base with bulla seminalis. Corpus bursae semioval; signum shape like a spin top, about 2/5 length of corpus bursae, ridged at anterior 1/3, straight at middle.

**Material examined.** [JN] 1♀, Mt. Paekun, Gwangyang-si, 19. vii. 2011 (Bae et al), genitalia slide no. INU-4516; [JB] 1♂, 1♀, Mt. Seongsu, Seongsu-myeon, Imsil-gun (35°38' 11.57"N, 127°24'35.01"E), 10. x. 2013 (Y.S. Bae, J.B. Heppner, Y.D. Ju, B.S. Park, and S.M. Na), genitalia slide no. INU-4569 & -4571; [JN] 2♂, Hwaheung-ri, Wando-eup, Is. Wan-do, (34°20' 17.51"N, 126°41'46.57"E), 23. vi. 2013 (Y.S. Bae, Y.D. Ju, Mujie Qi, B.S. Park, and D.J. Lee), genitalia slide no. INU-4568 & -4570.

**Host plant.** Unknown.

**Distribution.** Korea (JB, JN), Japan (Kyushu).

**Remarks.** Table 1 describes the features that distinguish it from the similar *Y. longa* Moriuti.

#### *Ypsolopha longa* Moriuti, 1964

(Figures 2 and 4A–4D)

*Ypsolopha longa* Moriuti, 1964: 207.

Table 1. Features that distinguish the species *Ypsolopha fujimotoi* from *Ypsolopha longa*.

Species	Wingspan (mm)	Uncus	Gnathos	Socius/Saccus (Ratio)	Adeagus/Valva (Ratio)	Cornuti
<i>Ypsolopha fujimotoi</i>	23–30	subulate	Densely covered with teeth	1	1	8 small spines
<i>Ypsolopha longa</i>	22–31	degenerate	Covered with larger teeth outwardly	1.25	1.2	> 8 spines

*Theristis acuminata* (Butler, 1878): Matsumura (not Butler, 1878), 1931: 1104; Inoue, 1954:36. TL: Japan (Honsyu).

*Ypsolopha longus* Moriuti, 1977: 107; Moriuti, 1982: 211; Byun and Bae, 2001: 157; Byun et al, 2009: 138.

*Ypsolopha longa* Moriuti: Sohn et al, 2010: 35; Jin et al, 2013: 44; Yamauchi and Hirowatari, 2013: 174.

**Diagnosis.** Adult (Figure 2). Wingspan, 22–31 mm. The species is superficially similar to *Y. fujimotoi* Moriuti, 1964, but it can be distinguished by a black dot at the tornus. Forewing with four longitudinal ochreous brown lines. Uncus degenerate. Gnathos covered larger teeth outwardly. Saccus 1.25 times as long as socius (Figure 4A). Adeagus 1.2 times as long as valva and comprised more than eight spines (Figure 4B).

**Material examined.** [GG] 1♂, Mt. Soyo, Dongducheon-si, 17. v. 1997 (Y.S. Bae, B.W. Lee, N.H. Ahn, and C.M. Lee), genitalia slide no. INU-4567; [GW] 1♂, Mt. Chiak, Wonju-si, 8. v. 1999 (Y.S. Bae, M.K. Paek, C.M. Lee, N.H. Ahn, Kim, and Kim), genitalia slide no. INU-4532.

**Host plant.** Celastraceae: *Euonymus sieboldianus* Blume (Moriuti, 1977).

**Distribution.** Korea (GG, GW), Japan (Honsyu), China (Guangdong, Hubei, Sichuan), Russia.

**Remarks.** This species has two types of body color. In this study, we examined the ochreous type.

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